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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/681,861	06/19/2001	Mathew L. Sommers	GLO 2 0054	7250

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EXAMINER

HARPER, HOLLY R

ART UNIT PAPER NUMBER

2879

DATE MAILED: 07/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/681,861

Applicant(s)

SOMMERS, MATHEW L.

Examiner

Holly R. Harper

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (USPN 5,998,925) in view of Miller (USPN 6,044,189).

In regard to claim 1, the Shimizu reference discloses a light-emitting device comprised of a nitride compound semiconductor (Column 3, Lines 26-27) providing blue emission (Column 4, Line 64). A coating material made of phosphor and epoxy is used to surround the nitride compound (Column 16, Lines 54-60 and Figure 1). The Shimizu reference does not specify that the frame has a rough portion in contact with the epoxy. The Miller reference teaches that when using an epoxy a rough or textured surface improves adhesion (Column 5, Lines 9-12). It would have been obvious to one of ordinary skill in the art at the time the invention was made to create a rough surface on the part of the frame contacting the epoxy, as taught by Miller, to improve adhesion.

In regard to claims 2-4, the Shimizu reference discloses that the nitride compound contains GaN (Column 4, Line 53), a binary compound in group III.

In regard to claim 5, the Shimizu reference discloses that a GaN compound semiconductor is made by forming a layer of InGaN on a substrate (Column 13, Line 60). This is surrounded by the epoxy (Figure 1).

In regard to claim 6, the Shimizu reference discloses that the use of a sapphire substrate is preferable (Column 14, Lines 9-10).

In regard to claim 7, the Shimizu reference discloses a light-emitting device comprised of a nitride compound semiconductor (Column 3, Lines 26-27) providing blue emission (Column 4, Line 64). A coating material made of phosphor and epoxy is used to surround the nitride compound (Column 16, Lines 54-60 and Figure 1). The Shimizu reference does not specify that the frame has a rough portion in contact with the epoxy. The Miller reference teaches that when using an epoxy a rough or textured surface, which includes a designed surface, improves adhesion (Column 5, Lines 9-12). It would have been obvious to one of ordinary skill in the art at the time the invention was made to create a rough surface on the part of the frame contacting the epoxy, as taught by Miller, to improve adhesion.

In regard to claim 8, the Shimizu reference discloses that the fluorescent material absorbs light of a short wavelength (blue light) and emits light of a long wavelength (Column 6, Lines 20-24), meaning visible light.

In regard to claim 9, the Shimizu reference discloses a light-emitting device comprised of a nitride compound semiconductor (Column 3, Lines 26-27) providing blue emission (Column 4, Line 64). A coating material made of phosphor and epoxy is used to surround the nitride compound (Column 16, Lines 54-60 and Figure 1). The Shimizu reference does not specify that the frame has a rough portion in contact with the epoxy. The Miller reference teaches that when

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using an epoxy a rough or textured surface improves adhesion (Column 5, Lines 9-12). Thus all surfaces of the frame contacting the epoxy would be roughened. It would have been obvious to one of ordinary skill in the art at the time the invention was made to create a rough surface on the part of the frame contacting the epoxy, as taught by Miller, to improve adhesion.

In regard to claims 10 and 11, the Shimizu reference discloses a light-emitting device comprised of a nitride compound semiconductor (Column 3, Lines 26-27) providing blue emission (Column 4, Line 64). A coating material made of phosphor and epoxy is used to surround the nitride compound (Column 16, Lines 54-60 and Figure 1). The fluorescent material absorbs light of a short wavelength (blue light) and emits light of a long wavelength (Column 6, Lines 20-24), meaning visible light. The Shimizu reference does not specify that the frame has a rough portion in contact with the epoxy. The Miller reference teaches that when using an epoxy a rough or textured surface improves adhesion (Column 5, Lines 9-12). The roughened portion of the frame would increase the surface area in contact with the epoxy. It would have been obvious to one of ordinary skill in the art at the time the invention was made to create a rough surface on the part of the frame contacting the epoxy, as taught by Miller, to improve adhesion.

In regard to claim 12, the Shimizu reference discloses the use of a phosphor that has two ranges of wavelengths. The range of the short wavelength being absorbed is 400 to 500 nm (Figure 3A) and the range of the long wavelength being emitted is 450 nm to 700 nm (Figure 3B).

In regard to claim 13, the Shimizu reference discloses a light-emitting device comprised of a nitride compound semiconductor (Column 3, Lines 26-27) providing blue emission (Column 4, Line 64). A nitride compound semiconductor is made by forming a layer of InGaN on a

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substrate (Column 13, Line 60). A coating material made of phosphor and epoxy is used to surround the nitride compound and substrate (Column 16, Lines 54-60 and Figure 1). The frame includes an uneven surface (Figure 1, element 105). In the uneven part of the frame, the nitride compound, substrate, and epoxy are located.

In regard to claim 14, the Shimizu reference discloses that the nitride compound contains GaN (Column 4, Line 53), a binary compound.

In regard to claim 15, the Shimizu reference discloses that the use of a sapphire substrate is preferable (Column 14, Lines 9-10).

In regard to claim 16, the Shimizu reference discloses a light-emitting device comprised of a nitride compound semiconductor (Column 3, Lines 26-27) providing blue emission (Column 4, Line 64). A coating material made of phosphor and epoxy is used to surround the nitride compound (Column 16, Lines 54-60 and Figure 1). The fluorescent material absorbs light of a short wavelength (blue light) and emits light of a long wavelength (Column 6, Lines 20-24), meaning visible light. The Shimizu reference does not specify that the frame has a rough portion in contact with the epoxy. The Miller reference teaches that when using an epoxy a rough or textured surface, which could be a designed surface, improves adhesion (Column 5, Lines 9-12). The roughened portion of the frame would increase the surface area in contact with the epoxy. It would have been obvious to one of ordinary skill in the art at the time the invention was made to create a rough surface on the part of the frame contacting the epoxy, as taught by Miller, to improve adhesion.

In regard to claim 20, the Miller reference teaches the use of a roughened surface when applying an epoxy. It is well known in the art that ridges, grooves, or dimples are a common way of providing roughness on a surface.

In regard to claim 21, the recitation “roughened portion directs nitride compound emission away from the nitride compound” has not been given patentable weight because is considered an intended used recitation. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

In regard to claim 22, the Miller reference teaches the use of a roughened surface when applying an epoxy. It is well known in the art that ridges, grooves, or dimples are a common way of providing roughness on a surface.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chang et al. (USPN 6,576,491 B1) discloses that dimples on a surface improve the adhesion when using an epoxy.

Pruette et al. (USPN 5,961,678) discloses that ridges enhance the attachment of a surface through epoxy.

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Contact Information

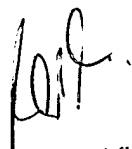
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Harper whose telephone number is (703) 305-7908. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (703) 305-4794. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Holly Harper
Patent Examiner
Art Unit 2879



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